

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

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Applicant's or agent's file reference 114312: EJH:ts	FOR FURTHER ACTION	See Form PCT/IPEA/416
International application No. PCT/AU2005/000405	International filing date (<i>day/month/year</i>) 21 March 2005	Priority date (<i>day/month/year</i>) 19 March 2004
International Patent Classification (IPC) or national classification and IPC: <div style="text-align: center;"> Int. Cl. B62H 3/06 (2006.01) A47F 5/10 (2006.01) B62H 3/12 (2006.01) A47B 43/00 (2006.01) B62H 3/08 (2006.01) </div>		
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● This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 3 sheets, including this cover sheet.

3. This report is also accompanied by ANNEXES, comprising:

a. ☒ (sent to the applicant and to the International Bureau) a total of 12 sheets, as follows:

☒ sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).

☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.

b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or table related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

<input checked="" type="checkbox"/> Box No. I	Basis of the report
<input type="checkbox"/> Box No. II	Priority
<input type="checkbox"/> Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
<input type="checkbox"/> Box No. IV	Lack of unity of invention
<input checked="" type="checkbox"/> Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
<input type="checkbox"/> Box No. VI	Certain documents cited
<input type="checkbox"/> Box No. VII	Certain defects in the international application
<input type="checkbox"/> Box No. VIII	Certain observations on the international application

Date of submission of the demand 14 October 2005	Date of completion of this report 17 February 2006
Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized Officer ZBIGNIEW BIELAWSKI Telephone No. (02) 6283 2218

Box No. I **Basis of the report**1. With regard to the **language**, this report is based on:

- ☒ The international application in the language in which it was filed
- ☐ A translation of the international application into _____, which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3(a) and 23.1 (b))
 - ☐ publication of the international application (under Rule 12.4(a))
 - ☐ international preliminary examination (Rules 55.2(a) and/or 55.3(a))

2. With regard to the **elements** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages _____ as originally filed/furnished
 - pages* _____ received by this Authority on _____ with the letter of _____
 - pages* **1-8** received by this Authority on **27 October 2005** with the letter of **27 October 2005**
- ☒ the claims:
- pages _____ as originally filed/furnished
 - pages* _____ as amended (together with any statement) under Article 19
 - pages* **9-12** received by this Authority on **27 October 2005** with the letter of **27 October 2005**
 - pages* _____ received by this Authority on _____ with the letter of _____
- ☒ the drawings:
- pages **1/7-7/7** as originally filed/furnished
 - pages* _____ received by this Authority on _____ with the letter of _____
 - pages* _____ received by this Authority on _____ with the letter of _____

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to the sequence listing (*specify*): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to the sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims 1-12	YES
	Claims	NO
Inventive step (IS)	Claims 1-12	YES
	Claims	NO
Industrial applicability (IA)	Claims 1-12	YES
	Claims	NO

2. Citations and explanations (Rule 70.7)

Novelty (N) and Inventive Step (IS) Claims 1-12

None of the citations in the search report, individually or in combination, disclose the features of the claims. In particular none of them disclose a bicycle rack wherein a wheel supporting member connected to a base is pivotable about a level axis adjacent the rack's base between the base adjacent position and laterally extended position.

Furthermore, none of the distinguishing features over prior art would either be obvious to a person skilled in the art or would merely amount to adding common general knowledge. The claims are, therefore, novel and inventive.

"Rack"

Field of the Invention

This invention relates to a bicycle rack for receiving and supporting a bicycle from an upstanding support.

5 Background

The storage of bicycles can present a problem in regard to its storing them in a manner which is convenient. With the increased degree of medium density living the convenient storage of a bicycle can present a problem.

Disclosure of the Invention

- 10 Accordingly, the invention resides in a bicycle rack intended in use to be supported from a support, the rack comprising a base adapted to be fixed to the support, a support member having an outer and an inner edge, the inner edge of the support member connected to the base to enable the support member to be pivotable about a first axis which in use is to be generally level, to be moveable
15 between a first position, at which it is adjacent to the support and a second position at which it extends laterally from the support, the support member being adapted to receive and support a portion of the wheel of a bicycle between the edges when the support member is in its second position.

- According to one embodiment, support member is pivotable from the base about
20 a generally upright axis.

- According to a preferred feature of the invention, the support member is provided with a slot shaped first space between the inner edge and the outer edge, wherein the first space is configured to receive the portion of the wheel. According to a preferred feature of the invention the outer edge of the support
25 member defines the outer end of the first space. According to a further preferred feature of the invention, the outer end of the first space is closed. According to a

further preferred feature of the invention, the outer edge of the support member defines the closed outer end of the first space and the outer edge provides a guide and support surface for the wheel on its movement into and out of the first space. According to a preferred feature of the invention the upper surface of the
5 outer edge has a concave profile. According to a preferred feature of the invention, the inner end of the first spacer is defined by a transverse surface. According to a preferred feature of the invention, the transverse surface is provided by a cross member extending across the inner end of the first space.

According to a preferred feature of the invention, the rack further comprises a
10 brace member, the brace member being pivotally supported from the base for pivotable movement about a second axis, the first and second axes being parallel and spaced from each other, the brace member being moveable with the support member such that, when the support member is in its second position, the brace member provides support to the support member. According to a
15 further preferred feature of the invention, the support member and brace member are interengaged outward of their pivotable mountings such that movement of the support member causes the pivotable movement of the brace member.

According to a preferred feature of the invention, the brace member is provided with a second space which cooperates with the first space defined by the support
20 member to provide a combined space which is configured to receive the portion of the wheel, wherein the second space provides an upright extent to the combined space while the first space provides a lateral extent to the combined space.

According to one embodiment, the rack further includes a storage shelf, the
25 storage shelf being supported from a side of the support member to extend transversely outward from the support member.

The invention will be more fully understood in the light of the following description of several specific embodiments.

Brief Description of the Drawings

The description is made with reference to the accompanying drawings of which:

Figure 1 is a perspective elevation view of bicycle rack according to the first embodiment in a collapsed condition;

- 5 Figure 2 is a perspective elevation view of bicycle rack according to the first embodiment in an extended condition;

Figure 3 is a side elevation view of bicycle rack according to the first embodiment supporting a bicycle;

- 10 Figure 4 is a perspective elevation view of a bicycle rack according to the second embodiment of the invention in an extended condition;

Figure 5 is a perspective elevation view of a bicycle rack according to the third embodiment in an extended condition;

- 15 Figure 6 is a perspective elevation view of a bicycle rack according to the third embodiment in an extended condition with the shroud and mounting shown in an exploded form; and

Figure 7 is a side elevation view of the bicycle rack according to the third embodiment supporting a bicycle.

Detailed Description of the Specific Embodiments

- 20 Each of the embodiments comprises a rack 10 which in use is to be supported from an upstanding support such as a wall and is intended to receive a bicycle whereby, when the rack is not in use, it can be collapsed so as to minimise obstruction. In addition, in locating a bicycle into and out of engagement with the rack according to each of the embodiments the user is not required to lift the

bicycle bodily into and out of position if the rack has been located at the correct height from the ground.

In the case of the first embodiment (as shown at Figures 1 to 3), the rack 10 comprises a generally planar base 12 which is adapted to be mounted, by conventional means, to a wall. However if desired, the rack could be supported from a post, pillar or like element having an upstanding surface.

The rack of the first embodiment 10 further comprises a support member 14 which is pivotally supported from the base 12 through a hinge housing 16 to be pivotable, about a generally level axis, between a first position at which it is adjacent to the wall (as shown Figure 1) and a second position at which position it extends laterally from the wall (as shown Figure 2) to be able to receive and support a bicycle wheel.

The support member 14 is formed from a single length of rod material which is bent to provide a pair of parallel elongate arms 20 which are spaced from each other to provide a first space between themselves, where the free end portions 24 of the arm at the inner edge of the support member are pivotally received in the hinge housing 16. The other ends of the arms are outermost and are interconnected by a bridging portion which defines the outer edge 22 of the support member. The outer edge 22 has a concave profile which is downwardly directed, when the support member is in the second position as shown at Figures 2 and 3 and which is intended to serve as a guide for the wheel of a bicycle which is to be supported by the rack 10. The support member 14 further comprises a cross-member 28 which extends between the arms 20 of the support member 14 intermediate of the length of the support member 14. The cross-member 28 has a V-shaped configuration and is to be generally coplanar with the support member. The arms 20, outer edge 22 and cross member 28 define a closed first space 26 having the configuration of a slot which is dimensioned to receive a portion of the wheel of the bicycle to be supported from the rack 10 whereby the outer periphery of the wheel is engaged at two angularly

spaced positions around the perimeter of the wheel by the outer edge 22 and cross-member 28.

The rack 10 further comprises a brace member 18 which provides support for the support member 14 when in its second position. The brace member 18 is also
5 pivotally supported from the base 12 and is also formed from a single length of rod material bent at its mid-point to provide a pair of arms 30 where the free ends 13 of the arms 30 are pivotally supported from the base 12 by a pair of second hinge sleeves 17. The other ends of the arms 30 are interconnected by a second bridging portion 32. The brace member 18 is received in the first space
10 26 and the outer ends of the arms 30 each support a laterally outwardly directed stop member 34 which is intended to receive and support the undersurface of arms 20 of the support member 14. The arms of the brace member define between themselves a second space which combines with the first space 26 of the support member to receive the wheel of the bicycle.

15 The interengagement between the support member 14 and brace member 18 is such that movement of the support member 14 from its first position to its second position effects corresponding movement of the brace member 18.

In use, and as shown at Figure 3, the front wheel of a bicycle is receivable in the first and second spaces of the support member and the brace member the
20 remainder of the bicycle is suspended from the front wheel. To mount a bicycle to the rack 10, the support member 14 is pivoted to its second position and the front wheel of the bicycle is raised from the ground such that it is generally located above the rear wheel and when in this position the front wheel is engaged with the outer edge 22 of the support member 14. In this regard, the
25 rack 10 is to be mounted at a height such that the front wheel will engage the outer edge 22 of the support member 14 when the front wheel has been raised from the ground but while the rear wheel of the bicycle remains in contact with the ground. With a force being applied to the bicycle to push it towards the base, the outer edge 22 engages the front wheel of the bicycle and the wheel rolls over
30 the outer edge to lift the bicycle and move into the first space 26 defined by the

support member and the second space defined by the brace member. Because of the leverage function of the front wheel when engaged with the outer edge 22 the user is not required to accommodate for the full weight of the bicycle when moving into and out of engagement with the first and second spaces since most
5 of the weight of the bicycle is borne by the support member through the outer edge 22.

The second embodiment, as shown at Figure 4 (the same reference numerals will be used to denote corresponding components), is identical to the first embodiment but also includes a removable shelf 19 supported from one of the
10 arms 20 of the support member 14. The shelf 19 is generally coplanar with the arms 20 so that, when the support member 14 is in its first position, the shelf 19 lies adjacent to the wall and does not appreciably protrude therefrom. The shelf 19 may be utilised for storage of additional items, for example helmets and/or other cycling gear when the support member is in its second position.

15 The third embodiment, as shown at Figures 5, 6 and 7 (the same reference numerals will be used to denote corresponding components), is a variation of the first embodiment in that the support member 14 and brace member 18 are not only pivotable about generally level axes, but also are pivotable about a generally upright axis. To this end, the base 12 comprises an elongate
20 member 40 from which the support member 14 and brace member are pivotally supported. The elongate member 40 is supported at each end by mounting brackets 42A and 42B through a pivot plates 44A and 44B respectively. The brackets 42A and 42B are adapted to be fixed to the wall. The third embodiment further comprises a shroud 46 and end caps 48 which jointly cover the brackets
25 42A and 42B and the elongate member 40 and which serves to enhance the appearance of the rack 10.

In addition, the first space 26, defined between the arms 20 of the support member 14, is not defined at its inner end by a cross-member, as in the case of the first and second embodiments, but rather by forming the inner ends of the
30 arms to be inwardly convergent. In addition, the brace member 18 is slidably

engaged with the arms 20 of the support member 14 through a pair of opposed lugs 29 on the arms 20 of the support member which limit the slidable movement of the brace member along the space. Each of the arms 30 are formed towards their lower ends with outwardly directed formations 34 which engage with the underneath of the arms 20 of the support member 14. Because the lugs 29 are located intermediate of the length of the space 26, the brace member provides additional support through the engagement of the formations 34 with the underneath of the support member, for the wheel of the bicycle when supported from the support member. In addition the brace serves to limit the pivotal movement of the wheel about the central axis of the space 26.

As illustrated in Figure 5 the pivoting facility offered by the elongate member 40 enables the support member 14 and brace member 18, and the bicycle supported thereby, to be jointly moved between a position to either side of the support brackets 42A and B close to the upstanding a wall (as shown in broken lines at Figure 5) and a position extending outwardly from the wall (as shown in solid lines at Figure 5). This reduces the extent to which the stored bicycle extends from the wall to provide a space-saving advantage.

In a further embodiment, the brace member extends upwardly from the base to the support member, to support the support member in its second position. Owing to the generally planar nature of the support member, brace member and base of each embodiment, the rack in its collapsed condition (i.e. when the bracing and support members are in their first positions) does not protrude laterally to an appreciable extent, thereby offering a space-saving advantage.

Throughout the specification, unless the context requires otherwise, the word "comprise" or variations such as "comprises" or "comprising", will be understood to imply the inclusion of a stated integer or group of integers but not the exclusion of any other integer or group of integers.

It should be appreciated that the scope of the present invention need not be limited to the particular scope of the embodiments described above. In particular the invention is not restricted in its scope to the storage of bicycles but can have

application to the storage of other articles such as surfboards, canoes and the like. In addition the support can comprise any structure which enables the rack to be mounted such that it can receive an item and in the case of a rack intended to support a bicycle can include a support adapted to be mounted to a vehicle to
5 facilitate the transport of the bicycle

Claims

The claims defining the invention are as follows:

1. A bicycle rack intended in use to be supported from a support, the rack comprising a base adapted to be fixed to the support, a support member having an outer and an inner edge, the inner edge of the support member connected to the base to enable the support member to be pivotable about a first axis which in use is to be generally level, to be moveable between a first position, at which it is adjacent to the support and a second position at which it extends laterally from the support, the support member being adapted to receive and support a portion of the wheel of a bicycle between the edges, when the support member is in its second position.
2. A bicycle rack as claimed at claim 1 wherein the support member is provided with a slot shaped first space between the inner edge and the outer edge, wherein the first space is configured to receive the portion of the wheel.
3. A bicycle rack as claimed at claim 3 wherein the outer edge of the support member defines the outer end of the first space.
4. bicycle rack as claimed at claim 3 wherein the outer end of the first space is closed.
5. A bicycle rack as claimed at claim 4 wherein the outer edge of the support member defines the closed outer end of the first space and the outer edge provides a guide and support surface for the wheel on its movement into and out of the first space.
6. A bicycle rack as claimed at claim 5 wherein the upper surface of the outer edge has a concave profile.

7. A bicycle rack as claimed at any one of claims 3 to 6 wherein, the inner end of the first space is defined by a transverse surface.
8. A bicycle rack as claimed at claim 7 wherein the transverse surface is provided by a cross member extending across the inner end of the first space.
9. A bicycle rack as claimed at any one of the preceding claims wherein, the rack further comprises a brace member, the brace member being pivotally supported from the base for pivotable movement about a second axis, the first and second axes being parallel and spaced from each other, the brace member being moveable with the support member such that, when the support member is in its second position, the brace member provides support to the support member.
10. A bicycle rack as claimed at claim 9 wherein the support member and brace member are interengaged outward of their pivotable mountings such that movement of the support member causes the pivotable movement of the brace member.
11. A bicycle rack as claimed at claim 9 or 10 wherein the brace member is provided with a second space which cooperates with the first space defined by the support member to provide a combined space which is configured to receive the portion of the wheel, wherein the second space provides an upright extent to the combined space while the first space provides a lateral extent to the combined space.
12. A bicycle rack as claimed at any one of the preceding claims wherein the rack further includes a storage shelf supported from a side of the support member to extend transversely outward from the support member.
13. A bicycle rack as claimed at any one of the preceding claims wherein the support member is pivotable from the base about a generally upright axis.

- 5 14. A bicycle rack supported from an upstanding support, the rack comprising a base fixed to the support, a support member having an outer and an inner edge, the inner edge of the support member connected to the base to enable the support member to be pivotable about a first axis which is generally level, to be moveable between a first position, at which it is adjacent to the support and a second position at which it extends laterally from the support, the support member being adapted to receive and support a portion of the wheel of a bicycle between the edges when the support member is in its second position.
- 10 15. A bicycle rack as claimed at claim 14 wherein the support member is provided with a first space which is adapted to receive the portion of the wheel between the inner edge and the outer edge.
16. A bicycle rack as claimed at claim 15 wherein the outer edge of the support member defines the outer end of the first space.
- 15 17. A bicycle rack as claimed at claim 16 wherein the outer end of the first space is closed.
- 20 18. A bicycle rack as claimed at any one of claims 17 wherein the outer edge of the support member defines the closed outer end of the first space and the outer edge provides a guide and support surface for the wheel on its movement into and out of the first space.
19. A bicycle rack as claimed at claim 18 wherein the upper surface of the outer edge has a concave profile.
20. A bicycle rack as claimed at any one of claims 15 to 19 wherein, the inner end of the first space is defined by a transverse surface.
- 25 21. A bicycle rack as claimed at claim 20 wherein the transverse surface is provided by a cross member extending across the inner end of the first space.

- 5 22. A bicycle rack as claimed at any one of claims 14 to 21 wherein, the rack further comprises a brace member, the brace member being pivotally supported from the base for pivotable movement about a second axis, the first and second axes being parallel and spaced from each other, the brace member being moveable with the support member such that, when the support member is in its second position, the brace member provides support to the support member.
- 10 23. A bicycle rack as claimed at claim 22 wherein the support member and brace member are interengaged outward of their pivotable mountings such that movement of the support member causes movement of the brace member.
- 15 24. A bicycle rack as claimed at claim 22 or claim 23 wherein the brace member is provided with a second space which cooperates with the first space defined by the support member to provide a combined space wherein the second space provides an upright extent to the combined space while the first space provides a lateral extent to the combined space.
- 20 25. A bicycle rack as claimed at any one of claims 14 to 24 wherein the rack further includes a storage shelf supported from a side of the support member to extend transversely outwardly from the support member.
26. A bicycle rack as claimed at any one of claims 14 to 25 wherein the support member is pivotable from the base about a generally upright axis.
27. A bicycle rack substantially as herein described with reference to the accompanying drawings.
- 25 28. A bicycle rack supported from an upstanding support substantially as herein described with reference to the accompanying drawings.